and in the peripheral blood. Ross considers that these round or pear-shaped bodies, originally free, become included in the cytoplasm of various kinds of cells; here they surround themselves with a wall. Growth proceeds and the chromatin divides. The chromatin within the parasites stains deeply in masses, and these masses vary in number from one to twelve. While still within the cell, in some cases, the chromatin mass, when it has reached full size, gives origin to several minute curled and twisted threads which closely resemble Spirochete pallida. Ross sees a parallel to the intercellular parasites found in guinea-pigs and earth-worms; he has failed so far to find these bodies in non-syphilitic cases. The suggestion is that the spirochetes are really microgametes or male elements, and that some of the round or pear-shaped bodies are possibly macrogametes or female elements. In the same number of the *British Medical Journal* appears a paper by E. JENNINGS, who has used the jelly method and found the same bodies as are here mentioned; while S. R. MOOLGAVKAR, still in the same number, describes similar bodies.

Thyroid Action and Reaction.—FARRANT (*Proc. Royal Soc. Med., Path. Soc.*, London, 1912, vi, 21) points out that there has been a general recognition among pathologists that the histological appearance of the thyroid is apt to be modified in sundry cases of infection. Hitherto, to our knowledge, no one has carefully studied this matter, so that Farrant's observations here given appear so novel as to demand confirmation. Nevertheless the fact that they emanate from Prof. Cushing's laboratory is in itself strong evidence in favor of their immediate acceptance. Farrant points out that the thyroid secretion reaches the circulation by means of the veins, that absorption occurs by the lymphatics is now known to be erroneous. The inferior thyroid veins are the largest, and more than two-thirds of the thyroid secretion reaches the left side by means of the thyroid veins. The left innominate vein receives the thoracic duct, the right, the right lymphatic trunk. Thus there is a correspondence between the opening of the thyroid veins and of the lymphatic trunks, and it may well be asked whether the thyroid has any influence upon the destruction of toxins reaching the venous system through the main lymphatics. Farrant illustrates by numerous photographs that in cases of infantile diarrhea, diphtheria, measles with bronchopneumonia, and whooping cough with bronchopneumonia, according to the duration and intensity of the disease, so does the thyroid present evidence of a succession of changes which can only be regarded as indicating increased production and discharge of secretion. He notes the following succession of changes: (1) The colloid becomes finely granular; (2) it becomes vacuolated and partially absorbed; (3) the cells lining the vesicles become more numerous, elongated, approaching the columnar type and arranged in masses; then the colloid becomes entirely absorbed, becoming crenated and infolded; (4) the infolding and cell increase tend to transform the vesicles into solid masses of cells. He next proves from experiment that this thyroid reaction is caused by the toxins, finding the same succession of changes to occur in the thyroids of guinea-pigs which have been injected with diphtheria toxin, and he is able to show that when the guinea-pigs injected with diphtheria toxin are simultaneously given thyroid powders, there is a marked delay in the fatal event, so much so that guinea-pigs, previously fed on thyroid, in several cases survived when given one and a half times the minimal lethal dose. These findings led to a further series of observations in which it was discovered that blood serum of the thyroid fed animals gains definite antitoxic properties. Of the 5 guinea-pigs which had been so fed, 4 survived one and one-half times the minimal lethal dose of diphtheria, whereas all the controls died in from two to six days. The one exception died with an abscess developing in the neck. It is further noted that rabbits fed with diphtheria toxin developed the same symptoms as those produced by thyroid feeding, namely, loss of weight, tachycardia, fur changes, etc., while diphtheria antitoxin fed to thyroidectomized animals in similar quantities has no ill results; on the contrary, there is a distinct gain in weight. Lastly, it is found that in horses employed in the production of diphtheria antitoxin, the serum contains much more iodine than does that of the normal animal. From this it is concluded that certain toxins stimulate the thyroid into a condition of hyperplasia; during this change it seems probable that iodine-containing substances are poured out into the circulation. This indicates some close relationship between thyroid function and the development of certain antitoxins, and it is suggested that the hyperplasia observed in the condition of toxemia above noted is intimately associated with the attempt to form antitoxins. The article is illustrated with 30 good microphotographs of sections of thyroid in various conditions—cases of the disease as above noted, from horses treated with diphtheria toxins, and from guinea-pigs similarly treated.

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